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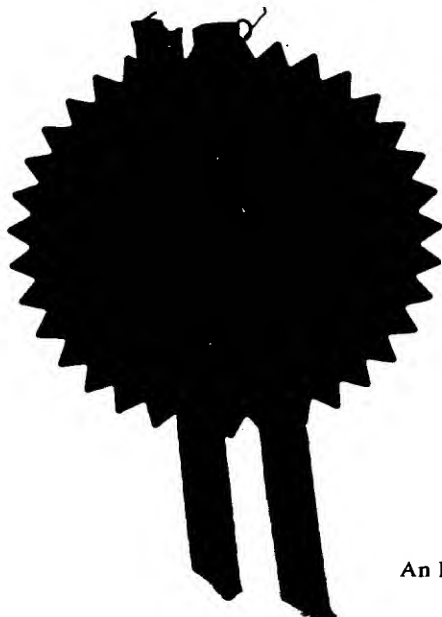
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- 8 FEB 1999

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08FEB99 E423325-17 D01846 Patent Office
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Cardiff Road
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1. Your reference

AWN/CK/P803

2. Patent application number
(The Patent Office)

9902600.7

8 FEB 1999

3. Full name, address and postcode of the or of each applicant (underline all surnames)

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① 7569478001

UK ② 7598030001

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

4. Title of the invention

MECHANICAL NUT AND STUD
REMOVAL TOOL

APPLEYARD LEES

15 CLARE ROAD
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HX1 2HY

AA005

190001

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

Patents ADP number (if you know it)

6. You are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

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(day / month / year)

If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
(day / month / year)

Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

- a) any applicant named in part 3 is not an inventor, or
- b) there is an inventor who is not named as an applicant, or
- c) any named applicant is a corporate body. see note (d))

Yes

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Continuation sheets of this form

Description

4

Claim(s)

Abstract

Drawing(s)

1 + 1

pk

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11. I/We request the grant of a patent on the basis of this application.

Signature

Date

05 02 99

12. Name and daytime telephone number of person to contact in the United Kingdom

A. W. NEILL
01422 330110

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MECHANICAL NUT AND STUD REMOVAL TOOL

Our co-pending UK Patent application number 9827489.7 defines a tool for aiding the removal of a fastening member from a structure to which it is
5 attached by means of a threaded connection, the tool comprising: an elongate body member having first and second ends, the first end having means for deforming an end face of the fastening member to provide an area of purchase thereon; and means to cause rotation of the fastening member to unscrew the
10 fastening member from the structure.

According to a preferred embodiment of the invention, the tool is provided with locating means to locate the first end with respect to the end face of the fastening member.

15 The locating means may comprise centralising means.

The locating means may comprise a mandrel for engagement with the end face of the fastening member.

20 The mandrel may be spring mounted within the body member.

Preferably the leading end of the mandrel is tapered.

According to another preferred feature of the invention, the tool is provided
25 with means for preventing peripheral damage to the structure.

For example a cover or shroud may be provided to surround the means for deforming the end face of the fastening member.

By way of example, a further specific embodiment of the invention will now be described, with reference to the accompanying drawing, in which :-

5 Figure 7 is a diagrammatic exploded view of this embodiment of the invention.

As with other embodiments of the invention, the tool shown in Figure 7 has a body member 30 which in use is fitted with blades 31. The blades 31 have a rib 32 which fits into a slot 33 extending across the body member 30.

10

The body member 30 has a passage 34 extending therethrough and within this passage there is a web 35 having a central aperture 36.

15 The lower end of the passageway 34 receives a compression spring 37 and a mandrel 38. The compression spring 37 acts between the mandrel and the web 35. The mandrel 38 is retained in position by a bolt 39 which passes through the hole 36 in the web 35 and into a threaded bore 40 in the mandrel 38. The leading end 41 of the mandrel is tapered.

20 When the tool is presented to the end face of the screw threaded member to be removed, the tapered end 41 of the mandrel 38 is projecting beyond the blades 31, since there is also a passageway 42 through the bladed member.

25 Thus, the leading end of the mandrel 38 may first be adjusted until it is in the exact centre of the exposed end face of the threaded member before an impact is delivered to drive the blades into the end face.

When the blades are driven into the end face, the mandrel 38 is depressed further into the body member 30 against the action of the spring 37.

5 To reduce the risk of peripheral damage to the surrounding structure containing the threaded member which is to be removed, the whole tool is provided with a cylindrical sleeve 43 to capture any debris from the blades and prevent this debris from reaching the surrounding structure.

10 The upper part of the passageway 34 may have a square cross section, so that a square key can be inserted into it to provide rotational movement to the tool.

The invention is not restricted to the features of the foregoing embodiment. For example, male and female members may be reversed. For example instead of using a male mandrel which fits into a socket in the body, a female
15 mandrel could be provided which slides over a projecting part of the body.

The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and
20 the contents of all such papers and documents are incorporated herein by reference.

All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or
25 process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

Each feature disclosed in this specification (including any accompanying claims, abstract and drawings), may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is
5 one example only of a generic series of equivalent or similar features.

The invention is not restricted to the details of the foregoing embodiment(s). The invention extends to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims,
10 abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

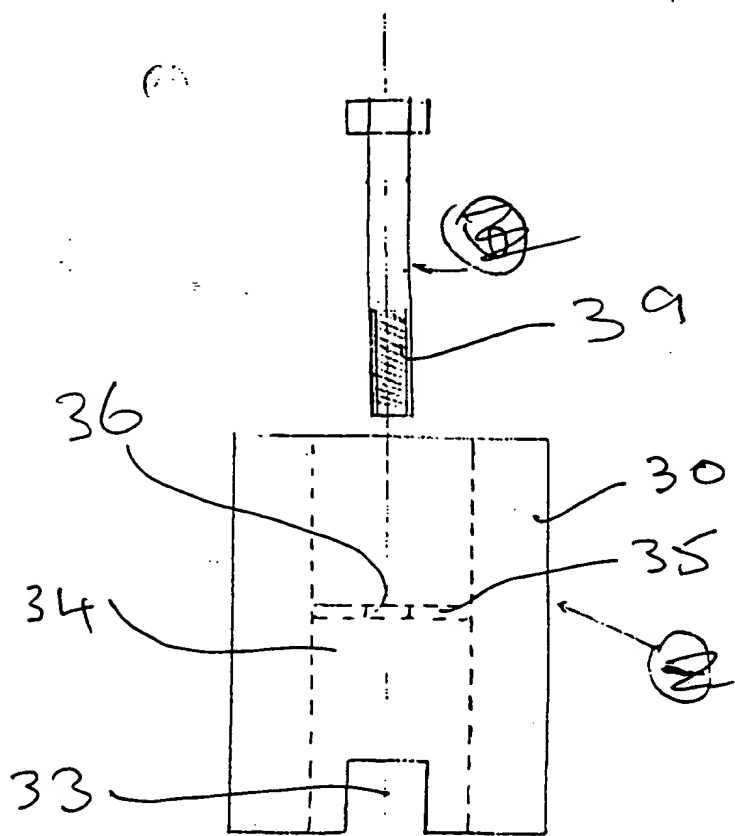
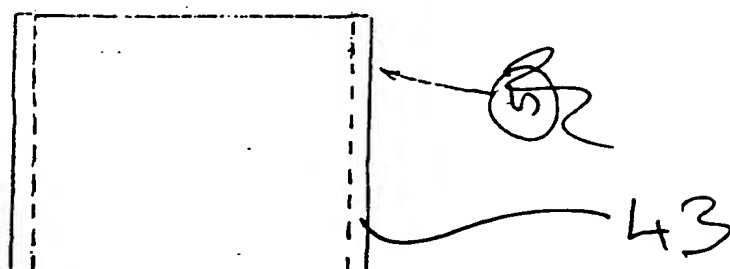
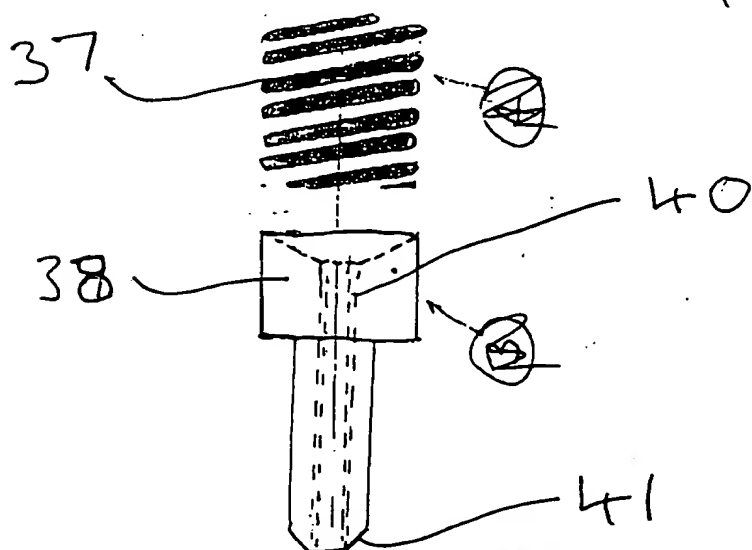
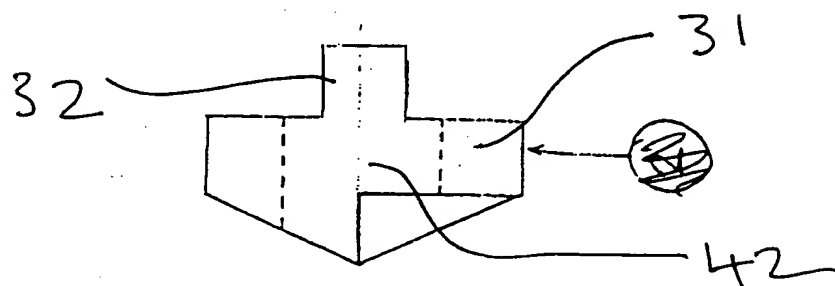


FIG 7



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Appleyard Lees